

## TP7: Route statique résumée et route par défaut

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# 1 Examen des routes statiques.

## Étape 1 : consultation de la configuration

On va vérifier la configuration de nos routeur :

→ Pour R1

→ On consulte la configuration actuelle du routage statique de R1

avec **show running-config**

```
ip classless
ip route 192.168.2.0 255.255.255.0 172.16.2.2
ip route 192.168.1.0 255.255.255.0 172.16.2.2
ip route 172.16.1.0 255.255.255.0 172.16.2.2
```

→ On affiche la table de routage de R1 avec **show ip route**

```
R1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.16.0.0/24 is subnetted, 3 subnets
S       172.16.1.0 [1/0] via 172.16.2.2
C       172.16.2.0 is directly connected, Serial0/0/0
C       172.16.3.0 is directly connected, FastEthernet0/0
S     192.168.1.0/24 [1/0] via 172.16.2.2
S     192.168.2.0/24 [1/0] via 172.16.2.2
```

→ Pour R2

→ On consulte la configuration actuelle du routage statique de R2

avec **show running-config**

```
ip classless
ip route 172.16.3.0 255.255.255.0 Serial0/0/0
ip route 192.168.2.0 255.255.255.0 Serial0/0/1
```

→ On affiche la table de routage de R2 avec **show ip route**

```
R2#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

172.16.0.0/24 is subnetted, 3 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
C       172.16.2.0 is directly connected, Serial0/0/0
S       172.16.3.0 is directly connected, Serial0/0/0
C       192.168.1.0/24 is directly connected, Serial0/0/1
S       192.168.2.0/24 is directly connected, Serial0/0/1
```

→ Pour R3

→ On consulte la configuration actuelle du routage statique de R3

avec **show running-config**

```
ip classless
ip route 172.16.3.0 255.255.255.0 192.168.1.2
ip route 172.16.2.0 255.255.255.0 192.168.1.2
ip route 172.16.1.0 255.255.255.0 192.168.1.2
```

→ On affiche la table de routage de R3 avec **show ip route**

```
R3#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.16.0.0/24 is subnetted, 3 subnets
S       172.16.1.0 [1/0] via 192.168.1.2
S       172.16.2.0 [1/0] via 192.168.1.2
S       172.16.3.0 [1/0] via 192.168.1.2
C       192.168.1.0/24 is directly connected, Serial0/0/1
C       192.168.2.0/24 is directly connected, FastEthernet0/0
```

## Etape 2 : vérification de la connectivité

Maintenant on veut vérifier les connectivités des PC :

→ PC1

→ PC1 vers PC2

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=8ms TTL=126
Reply from 172.16.1.10: bytes=32 time=6ms TTL=126
Reply from 172.16.1.10: bytes=32 time=6ms TTL=126
Reply from 172.16.1.10: bytes=32 time=5ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 5ms, Maximum = 8ms, Average = 6ms
```

→ PC1 vers PC3

```
C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=10ms TTL=125
Reply from 192.168.2.10: bytes=32 time=8ms TTL=125
Reply from 192.168.2.10: bytes=32 time=9ms TTL=125
Reply from 192.168.2.10: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 8ms, Maximum = 11ms, Average = 9ms
```

→ PC2

→ PC2 vers PC1

```
C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=8ms TTL=126
Reply from 172.16.3.10: bytes=32 time=4ms TTL=126
Reply from 172.16.3.10: bytes=32 time=5ms TTL=126
Reply from 172.16.3.10: bytes=32 time=7ms TTL=126

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 8ms, Average = 6ms
```

→ PC2 vers PC3

```
C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=7ms TTL=126
Reply from 192.168.2.10: bytes=32 time=2ms TTL=126
Reply from 192.168.2.10: bytes=32 time=5ms TTL=126
Reply from 192.168.2.10: bytes=32 time=5ms TTL=126

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 7ms, Average = 4ms
```

→ PC3

→ PC3 vers PC1

```
C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=11ms TTL=125
Reply from 172.16.3.10: bytes=32 time=8ms TTL=125
Reply from 172.16.3.10: bytes=32 time=8ms TTL=125
Reply from 172.16.3.10: bytes=32 time=11ms TTL=125

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 11ms, Average = 9ms

C:\>
```

→ PC3 vers PC2

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=9ms TTL=126
Reply from 172.16.1.10: bytes=32 time=5ms TTL=126
Reply from 172.16.1.10: bytes=32 time=5ms TTL=126
Reply from 172.16.1.10: bytes=32 time=7ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 5ms, Maximum = 9ms, Average = 6ms
```

## 2 Résumé des routes statiques (routeur R3).

→ A présent on va remplacer les routes statiques par une route agrégée sur R3, on efface les anciennes routes avec **no ip route**

```
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#no ip route 172.16.1.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.2.0 255.255.255.0 192.168.1.2
R3(config)#no ip route 172.16.3.0 255.255.255.0 192.168.1.2
R3(config)#ip route 172.16.0.0 255.255.255.0 192.168.1.2
R3(config)#
```

→ Afin de vérifier la nouvelle configuration du nouveau routage on effectue un **sh run**

```
ip classless
ip route 172.16.0.0 255.255.255.0 192.168.1.2
```

→ Puis on affiche la table de routage avec **show ip route**

```
R3#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

    172.16.0.0/24 is subnetted, 1 subnets
S       172.16.0.0 [1/0] via 192.168.1.2
C     192.168.1.0/24 is directly connected, Serial0/0/1
C     192.168.2.0/24 is directly connected, FastEthernet0/0
```

On va maintenant vérifier la connectivité du PC3 vers les autres PC du réseau avec des **ping**

→ PC3 vers PC2

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.
Reply from 192.168.2.1: Destination host unreachable.

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

→ PC3 vers PC1

```
C:\>ping 172.16.3.10

Pinging 172.16.3.10 with 32 bytes of data:

Reply from 172.16.3.10: bytes=32 time=17ms TTL=125
Reply from 172.16.3.10: bytes=32 time=2ms TTL=125
Reply from 172.16.3.10: bytes=32 time=15ms TTL=125
Reply from 172.16.3.10: bytes=32 time=2ms TTL=125

Ping statistics for 172.16.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 17ms, Average = 9ms
```

### 3 Configuration d'un réseau d'extrémité (routeur R1).

→ On va remplacer les routes statiques du R1 par une route par défaut, donc on efface à nouveau les anciennes routes avec **no ip route** et on reconfigure avec **ip route**

```
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#no ip route 172.16.1.0 255.255.255.0 172.16.2.2
R1(config)#no ip route 192.168.1.0 255.255.255.0 172.16.2.2
R1(config)#no ip route 192.168.2.0 255.255.255.0 172.16.2.2
R1(config)#ip route 0.0.0.0 0.0.0.0 172.16.2.2
R1(config)#exit
R1#
```

→ Pour vérifier la nouvelle configuration du routage statique on entre la commande **sh running-config**

```
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.2.2
```

→ On vérifie que la route par défaut a bien été configuré avec **sh ip route**

```
R1#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 172.16.2.2 to network 0.0.0.0

    172.16.0.0/24 is subnetted, 2 subnets
C       172.16.2.0 is directly connected, Serial0/0/0
C       172.16.3.0 is directly connected, FastEthernet0/0
S*    0.0.0.0/0 [1/0] via 172.16.2.2
```

→ Pour finir, on vérifiera la connectivité entre le PC1 et les autres PC avec des **ping**

→ PC1 vers PC2

```
C:\>ping 172.16.1.10

Pinging 172.16.1.10 with 32 bytes of data:

Reply from 172.16.1.10: bytes=32 time=9ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=1ms TTL=126
Reply from 172.16.1.10: bytes=32 time=9ms TTL=126

Ping statistics for 172.16.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 9ms, Average = 5ms
```

→ PC1 vers PC3

```
C:\>ping 192.168.2.10

Pinging 192.168.2.10 with 32 bytes of data:

Reply from 192.168.2.10: bytes=32 time=16ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125
Reply from 192.168.2.10: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.2.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 16ms, Average = 5ms
```